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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] About the stencil paper for sensible-heat mimeograph printing which used the manufacture approach of a porous body, and it, ink permeability of this invention is uniform in more detail, and it relates to the stencil paper for sensible-heat mimeograph printing with which the printed matter which does not have a set-off at high definition is obtained.
[0002]
[Description of the Prior Art] The thing of the structure which stuck with adhesives the porous base material conventionally constituted with the tissue paper which mixed a natural fiber, a synthetic fiber, or these in thermoplastics films, such as a polyester system film and a vinylidene-chloride system film, a nonwoven fabric, sha, etc. as stencil paper for sensible-heat mimeograph printing (it may only be hereafter called "stencil paper") is known (for example, JP,51-2513,A, JP,57-182495,A, etc.). However, the stencil paper for sensible-heat mimeograph printing using the porous tissue paper which consists of such fiber as a base material has the following troubles.
(1) Adhesives are accumulated like the web of a bird between the fiber of porous tissue paper, punching according [the part] to thermal beef fat becomes is hard to be performed, passage of ink is barred, and it becomes easy to generate nonuniformity, such as a printing white omission, by sticking porous tissue paper and a film using adhesives.

(2) The fiber of porous tissue paper itself bars passage of ink, and it becomes easy to generate printing nonuniformity.

(3) Since the smooth nature of a film plane falls by the fiber eye of porous tissue paper, adhesion with a thermal head is bad and a non-punch station can do it, printing nonuniformity occurs.
(4) In porous tissue paper, to printing quality, there is a limitation in control of ink, pass superfluous ink, or passage of ink is partially uneven, consequently a set-off occurs.
[0003] As for the ink permeability which is an important item in the stencil paper for these sensible-heats mimeograph printing, it turns out that it is influenced of a porous base material, and some proposals are made (for example, JP,1-267094,A, JP,59-16793,A, JP,3-8892,A, etc.). The porous base material which carried out paper making using what has a diameter of fiber especially thin in recent years is used preferably. However, the thin thing of the diameter of fiber had the problem of it having been expensive and becoming cost quantity.
[0004] In order to improve saxicavous, preparing the glue line which contains fine porosity resin as a glue line is proposed (JP,9-52469,A). However, since it is immediately stuck by the porous base material and the wet laminating method after applying a fine porosity layer as a glue line, while a fine porous layer cannot be made easily, the trouble which the white omission by the fiber of a porous base material tends to generate is in a solid image at the time of printing.
[0005] The sensible-heat mimeograph master which prepared the porous resin film in one side of a thermoplastic film previously was proposed (JP,07-139918,A, JP,07-305102,A, etc.), and printed matter without a set-off obtained this invention person etc. by high printing image quality. However, since the coating liquid for porous resin film formation used here used a lot of organic solvents, its earth environment top was not desirable in needing [a manufacturing installation] an explosion-proof type and solvent recovery equipment and being expensive, either. Moreover, under the effect of a residual solvent, punching sensibility deteriorated, and film contraction took place and there was a problem from which the so-called aging happens of being as curl nature getting worse ****.
[0006] Moreover, after that, this invention person etc. has the porous resin film which consists of resin on one field of a thermoplastics film in JP,10-147075,A and JP,10-236011,A, and proposed the stencil paper for sensible-heat mimeograph printing which comes to carry out the laminating of the porous fiber film which becomes the front face from fibrous material further. while printed matter without a set-off is obtained by high printing image quality by this

stencil paper for sensible-heat mimeograph printing being suggested from the idea of carrying out functional separation of the base part of the conventional stencil paper for sensible-heat mimeograph printing, and the porous resin film performing ink control, and carrying out the laminating of the porous fiber film -- chewiness required for conveyance nature and print durability - reinforcement can be obtained. However, similarly, since [said] a lot of organic solvents were used, the earth environment top of the coating liquid for porous resin film formation used here was not desirable in needing [a manufacturing installation] an explosion-proof type and solvent recovery equipment and being expensive, either. Moreover, about aging under the effect of a residual solvent, about curl nature, although there was little effect, degradation of punching sensibility was not solvable.

[0007] The manufacture approach of the stencil paper for sensible-heat mimeograph printing which forms in JP,6-47316,B and JP,6-47317,B the base material which has ink permeability with electron ray hardening mold resin or ultraviolet curing mold resin is indicated. However, by this approach, although it is going to form the pattern of a base material in gravure etc. and it is necessary to fail to scratch resin other than a crevice, it is difficult to suppose that there is nothing, and porosity was not formed as the pattern of gravure, but the technical problem that ink permeability was checked in a coat-like part occurred. Moreover, it was difficult for there to be a limitation in enlarging each heights and to obtain reinforcement required for conveyance and print durability. Although using it after the electron ray hardening mold resin or ultraviolet curing mold resin which carries out coating has dissolved in the emulsion or the solvent was also indicated, since an electron ray thru/or ultraviolet rays were irradiated after applying coating liquid on a thermoplastics film and drying a solvent, and it hardened after the resinous principle had condensed, the above problems were not solvable.

[0008]

[Problem(s) to be Solved by the Invention] The purpose of this invention therefore, by providing one side of a thermoplastics film with the stencil paper for sensible-heat mimeograph printing which has the porous resin film While offering the manufacture approach of the stencil paper for sensible-heat mimeograph printing which ink permeability was uniform and was excellent in solid ******, and there is no set-off and lessened the amount of the organic solvent used, not using an organic solvent with little aging at all By preparing the porous resin film in one side of a thermoplastics film, and offering the stencil paper for sensible-heat mimeograph printing which carried out the laminating of the porous fiber layer to this porous resin film surface It is in offering the manufacture approach of the stencil paper for sensible-heat mimeograph printing which ink permeability was uniform, it excelled in solid ******, and there was no set-off, and conveyance nature was excellent in and lessened the amount of the organic solvent used, not using an organic solvent with little aging at all.

[0009]

[Means for Solving the Problem] The above-mentioned technical problem is attained by (1) of this invention "the manufacture approach of the porous body characterized by making an aqueous-phase component dry after irradiating an electron ray or ultraviolet rays at the water-in-oil type emulsion of electron ray hardening resin or ultraviolet-rays hardening resin and stiffening a resinous principle."

[0010] The above-mentioned technical problem moreover, on one field of (2) "thermoplastics film of this invention After applying the water-in-oil type emulsion of electron ray hardening resin or ultraviolet-rays hardening resin, The stencil paper for sensible-heat mimeograph printing characterized by having the porous film obtained by irradiating an electron ray or ultraviolet rays, stiffening a resinous principle, and making an aqueous-phase component dry further", (-- it is attained by 3) "the stencil paper for sensible-heat mimeograph printing given in said ** (2) term characterized by having prepared the porous resin film which becomes one side of a thermoplastics film from electron ray hardening resin or ultraviolet-rays hardening resin, and carrying out the laminating of the porous fiber film of a basis weight 1 - 15 g/m2 to this porous resin film surface further."

[0011]

[Embodiment of the Invention] The manufacture approach of the porous body characterized by making an aqueous-phase component dry after ** (1) of this invention irradiates an electron ray or ultraviolet rays at the water-in-oil type emulsion of electron ray hardening resin or ultraviolet-rays hardening resin and stiffens a resinous principle is offered. As for the structure of the porous resin film which consists of the electron ray hardening resin or ultraviolet-rays hardening resin of this invention, what is the structure which this opening has penetrated in the porous film from the point of the permeability of ink succeeding the thickness direction is [that what is necessary is just what has the structure which has many openings in the membranous interior and a membranous front face] desirable. According to this invention, the above can be attained where the amount of the organic solvent used is lessened not using an organic solvent at all. That is, according to the formation approach of this invention, the water-in-oil type resin emulsion (W/O emulsion) which consists of electron ray hardening resin or ultraviolet-rays hardening resin is applied, an electron ray or ultraviolet rays is irradiated, and it can attain by the approach of drying the aqueous phase and forming the porous resin film after hardening the resinous principle of an oil reservoir. According to this approach,

electron ray hardening mold resin or ultraviolet curing mold resin comes to distribute the aqueous phase. The frame of the porous resin film is made to form in the state of the magnitude which does not check saxicavous by applying the so-called water-in-oil type emulsion on a base material, irradiating an electron ray or ultraviolet rays in the process before drying the aqueous phase, and making only the oil phase section harden. In case the aqueous phase is dried after that, a through tube is formed, and the porous resin film for sensible-heat mimeograph printing stencil paper which is excellent in an ink controllability can be formed.

[0012] The electron ray for porous resin film used for this invention Or the polymer which has the double bond of radical polymerization nature mainly in the structure as ultraviolet-rays hardening resin, Comparatively For example, the polyester of low molecular weight, a polyether, acrylic resin, It is a thing containing a monofunctional monomer, polyfunctional monomer, etc. of acrylate (meta), such as an epoxy resin and urethane resin, and radical polymerization nature. Furthermore, when constructing a bridge by ultraviolet rays, a photopolymerization initiator is contained, and each of electron ray hardening resin of these former or ultraviolet-rays hardening resin can be used by this invention.

[0013] As a monofunctional monomer of this invention, a vinyl system monomer, for example, (meta), acrylic ester, acrylamide (meta), an allyl compound, vinyl ether, vinyl ester, a vinyl heterocyclic compound, N-vinyl compound, styrene, an acrylic acid (meta), a crotonic acid, an itaconic acid, etc. are mentioned. Moreover, as polyfunctional monomer, diethylene GURIKORUJI (meta) acrylate, triethylene glycol di(metha)acrylate, tetraethylene glycol di (metha)acrylate, TORIMECHI roll pro pantry (meta) acrylate, pentaerythritol tetrapod (meta) acrylate, dipentaerythritol hexa (meta) acrylate, tris (beta-(meta) AKURIRO yloxy ethyl) isocyanurate, etc. can be illustrated.

[0014] Moreover, as a photopolymerization initiator, 2-ethylhexyl acrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, 2-hydroxyethyl acryloyl phosphate, tetrahydrofurfuryl acrylate, tetrahydrofurfuryl acrylate, and the acrylate of a tetrahydrofurfuryl derivative are mentioned as a monofunctional thing. As a thing of many organic functions, moreover, JISHIKUROBEN thenyl acrylate, JISHIKUROBEN thenyl oxy-ethyl acrylate, 1,3-butanediol diacrylate, 1,4-butanediol diacrylate, 1, 6-hexane JIARU diacrylate, diethylene glycol diacrylate, Neo bench RUGURI call 400 diacrylate, polyethylene-glycol 400 diacrylate, Hydronalium KISHIBI valine acid ester NEOBENCHIRU glycol diacrylate, Tripropylene glycol diacrylate, 1, 3-bis(3 '- acrylic oxyethoxy -2'-hydroxypropyl)-5,5-dimethylhydantoin, The diacrylate of a hydronalium KISHIBI valine acid ester NEOBEN chill glycol derivative, trimethylolpropane triacrylate, a pentaerythritol thoria chestnut rate, dipentaerythritol hexaacrylate, etc. can be illustrated.

[0015] W/O emulsion can be obtained even if it adds and emulsifies a water layer gradually directly, stirring to the oil phase which consists of electron ray hardening resin which introduced the hydrophilic group as an approach of obtaining the W/O emulsion of this invention, or ultraviolet-rays hardening resin. However, since the addition of a water layer cannot be made [many] in this case, hole density of the porous resin film may not be able to be made high. Therefore, the method of adding an emulsifier to electron ray hardening resin or ultraviolet-rays hardening resin generally, adding and emulsifying a water layer, and obtaining W/O emulsion is desirable.

[0016] Although a well-known water-in-oil type emulsifier can be conventionally used as an emulsifier used, the alkyl ether mold nonionic surface active agent which has a polyoxyethylene chain in a molecule, a polyurethane system surfactant, and a silicone system surfactant are desirable. Moreover, as HLB of an emulsifier, one to about six are desirable.

[0017] as the water layer which forms W/O emulsion -- water -- although it may be independent, in order to raise the stability of W/O emulsion or to control the diameter of puncturing of the porous resin film, it is desirable to add water soluble resin and to make viscosity of a water layer high.

[0018] As water soluble resin used, water soluble resin and absorptivity resin, such as starch, polyvinyl alcohol, hydroxyethyl cellulose, hydroxypropylcellulose, a carboxymethyl cellulose, polyamide resin, polyacrylic acid, a polyvinyl pyrrolidone, a polyethylene glycol, a styrene-maleic-acid copolymer, gelatin, casein, and gum arabic, can be used. As concentration of these water solutions, 0.1 to 10% of the weight, it is 0.3 - 3% weight preferably, and 5 - 100 mPa-sec / 28 degrees C are desirable as viscosity.

[0019] In addition, in order to adjust formation of the porous resin film, reinforcement, the magnitude of an aperture, etc., additives, such as a filler, can be added if needed in the porous resin film. In here, a filler is a concept in which a pigment, fine particles, and fibrous material are also contained. As the example, tabular fillers, such as artificial-mineral system needlelike fillers, such as mineral system needlelike fillers, such as a magnesium silicate, sepiolite, potassium titanate, wollastonite, xonotlite, and gypsum-fibrosum fiber, a non-oxide object system needlelike whisker, an oxide system whisker, and a multiple oxide system whisker, a mica, a glass flake, and talc, are mentioned. Pigments are organic polymer particles, such as not only an inorganic pigment but an organic pigment or polyvinyl acetate, polyvinyl chloride krill acid methyl, etc., and a zinc oxide, a titanium dioxide, a calcium carbonate, a silica, talc, a kaolin, etc. The microcapsule of Matsumoto Yushi-Seiyaku, Inc. and the Matsumoto microsphere can also be used effectively. It is 5% - 200% to electron ray hardening resin or ultraviolet-rays hardening resin preferably as an

addition of these additives. There is no effectiveness of an additive at 5% or less, and an adhesive property with a film worsens at 200% or more conversely.
[0020] On the porous resin film of this invention, an antistatic agent, a stick inhibitor, a surfactant, antiseptics, a defoaming agent, etc. can be used together within limits which do not check the effectiveness of this invention. It is not limited especially that the paint film which followed homogeneity by any approaches, such as the blade coating approach, the reverse-roll-coating approach, the gravure coating approach, the offset gravure coating approach, the knife coating approach, the die coating approach, and the kiss coating approach, should just be formed as the method of application of the porous resin film of this invention.
[0021] The electron ray which the conventional technique can use an electron ray or UV irradiation as it is, for example, is emitted from various electron ray accelerators, such as a cock loft WARUTON mold, a BANDE graph mold, a resonance transformation mold, an insulating core transformer mold, a linear model, an electro curtain mold, the Dynamitron mold, and a RF mold, when it is electron ray hardening and which has the energy of 100-300KeV preferably is used 50 to 1000 KeV.
[0022] Moreover, since a cure rate can be improved if the ultraviolet rays emitted from the light source of an ultrahigh pressure mercury lamp, a high-pressure mercury-vapor lamp, a low pressure mercury lamp, a carbon arc, a xenon arc, a metal halide lamp, etc. are used in the case of ultraviolet curing and the metal halide lamp or electrodeless discharge lamp D bulb which has continuous wave length is especially used between the luminescence wavelength which is 320-450nm, it is desirable. Since there is a possibility that ambient temperature may rise and a thermoplastics film etc. may contract when these radiations are irradiated, what has a cooling system is desirable. An electron ray or the hardened porous resin membrane layer which carried out UV irradiation is dried with a dryer. As a drying temperature, 40-70 degrees C is desirable, and since a heat shrink nature film contracts above 70 degrees C, it may not be desirable.
[0023] ** (2) of this invention is stencil paper for sensible-heat mimeograph printing which has at least the porous membrane obtained by the manufacture approach of ** (1) of above-mentioned this invention on one field of a thermoplastics film. The average aperture of the porous membrane of this invention has 5 micrometers or more 30 micrometers or less desirably more desirable than the field of the ink permeability as stencil paper for sensible-heat mimeograph printing 2 micrometers or more 50 micrometers or less. When an average aperture does not fulfill 2 micrometers, ink permeability is bad, when exceeding 50 micrometers, ink is extruded superfluously, and faults, such as soiling on the back of paper (set-off) and a blot, occur. That is, even if an average aperture is too small and it is too large, good printing quality is not acquired.
[0024] The coating weight of porous membrane is two or less two or more 5 g/m10.0 g/m desirably two or more 3 g/m and two or less 20 g/m. In less than two 3 g/m, it is low, and by two or more 20 g/m, stiffness bars ink permeability and worsens an image.
[0025] Although what has polyester, a polyamide, polypropylene, polyethylene, a polyvinyl chloride, a conventionally well-known polyvinylidene chloride, or its conventionally well-known copolymer etc. is used, as for the thermoplastics film which can be used by this invention, the polyester film from the point of punching sensibility is used especially preferably.
[0026] The copolymer of polyethylene terephthalate, ethylene terephthalate, and ethylene isophthalate, the copolymer of hexamethylene terephthalate and cyclohexane dimethylene terephthalate, etc. can be mentioned preferably as polyester used for polyester film. In order to improve punching sensibility, as a desirable thing, the copolymer of ethylene terephthalate and ethylene isophthalate, the copolymer of hexamethylene terephthalate and cyclohexane dimethylene terephthalate, etc. can be mentioned especially.
[0027] The organic particle which makes a constituent inorganic particles, such as clay, a mica, titanium oxide, a calcium carbonate, a kaolin, talc, wet, or a dry type silica, acrylic acids, styrene, etc. as a smoothability grant agent, other additives, etc. can be blended with the thermoplastics film in this invention.
[0028] The thickness of the thermoplastics film in this invention is 0.1-5.0 micrometers usually preferably, and is 0.1-3.0 micrometers still more preferably. If thickness exceeds 5.0 micrometers, saxicavous may be fallen, and if thinner than 0.1 micrometers, film production stability may get worse, or print durability may fall.
[0029] This invention is the purpose which improves an adhesive property with the porous resin film, can carry out corona treatment to the field where coating of the porous resin film of a thermoplastics film is carried out, or can prepare a glue line in it. As this glue line, polyamides, such as vinyl system resin [like], such as polyvinyl acetate, a polyvinyl butyral, a vinyl chloride-vinyl acetate copolymer, a vinyl chloride-vinylidene-chloride copolymer, a vinyl chloride-acrylonitrile copolymer, and a styrene-acrylonitrile copolymer, polybutylene, and nylon, polyphenylene oxide, acrylic ester (meta), a polycarbonate, polyester resin, polyether resin, polyurethane resin, these copolymers, mixture, a denaturation object, etc. are used. Furthermore, in the range which does not check the effectiveness of this invention, various fillers, an antistatic agent, a stick inhibitor, a surfactant, antiseptics, a defoaming agent, a

plasticizer, a modifier, etc. can be used together.
[0030] Moreover, in order to improve an adhesive property more, it is desirable to use the poly isocyanate together. It is desirable to use together polyester polyol, polyether polyol, polyurethane resin, and the poly isocyanate preferably especially. In order to improve saxicavous [in a thermal head], it is good to use together the polyester polyol whose softening temperature is 40-150 degrees C, polyether polyol, polyurethane resin, and the poly isocyanate. What is necessary is just to choose suitably the mole ratio of an OH radical / NCO radical here according to the property needed although it is 1 / 0.1 - 1/20. Even if it uses the low resin of softening temperature to reduce the softening temperature of a functional thin layer, you may carry out by adding a plasticizer etc.
[0031] The thickness after desiccation of a thin layer has 0.001 micrometers or more desirable 2.0 micrometers or less, and they are more desirable than 0.01 more micrometer or more 1.0 micrometers or less and **. If an adhesive improvement effect is small when smaller than 0.001 micrometers, and 2.0 micrometers is exceeded, it will have a bad influence on heat punching sensibility.
[0032] As for the stencil paper for sensible-heat mimeograph printing of this invention, it is desirable to prepare the thin layer which consists of silicone oil, silicone system resin, fluorine system resin, a surfactant, an antistatic agent, a heat-resistant agent, an antioxidant, an organic particle, an inorganic particle, a pigment, a distributed assistant, antiseptics, a defoaming agent, etc. in order to prevent the welding at the time of punching on one side which should contact the thermal head of a film. 0.005-0.4 micrometers of thickness of the thin layer of this welding prevention are 0.01-0.4 micrometers more preferably.
[0033] ** (3) of this invention is stencil paper for sensible-heat mimeograph printing characterized by having prepared the porous resin film which becomes one side of a thermoplastics film from electron ray hardening resin or ultraviolet-rays hardening resin, and carrying out the laminating of the porous fiber layer to this porous resin film surface further. This porous resin film is formed like the operation gestalt of ** (2). However, since the coating weight of the porous resin film should just be the coating weight which can perform control of ink passage, it is two or less two or more 0.5 g/m5 g/m preferably two or less two or more 0.1 g/m10 g/m. If coating weight cannot perform control of ink in less than two 0.1 g/m and exceeds 5 g/m2, the standup of a printing image will become late.
[0034] What is used for thermosensitive mimeograph printing from the former can be used for the porous fiber film used for the operation gestalt of ** (2) of this invention. That is, like this, with an about [1-15g //m] 2 basis weight mixed tissue paper is desirable still more desirable independently [chemical fibers, such as natural fibers such as a paper bush and Manila hemp, rayon, Vinylon, polyester, and a polyacrylonitrile,], and it is the range of a basis weight 3 - 10 g/m2. chewiness with a basis weight sufficient by less than two 1 g/m -- there is a problem that the amount of the ink (the amount of ** version ink) which - reinforcement is not obtained, and ink permeability gets worse [a basis weight] by two or more 15 g/m, and a printing standup becomes late, and adheres to a version at the time of the ** version increases.
[0035] Moreover, the porous fiber film may process resin etc., in order to strengthen the binding capacity between fiber. In this case, it is not limited especially although synthetic rubber, such as a viscose, polyvinyl acetate resin, acrylic resin, vinyl chloride resin, and SBR, NBR, PVA, urethane resin, an epoxy resin, etc. are mentioned as a coating object used.
[0036] Although it may not be used, using adhesives or whichever is sufficient as it, since the laminating of the porous resin film of this invention and the porous fiber film has a possibility of it being necessary to use porous membrane as adhesives, and checking porous formation when not using adhesives, it is [after forming porous membrane] desirable [a laminating] to paste up using adhesives.
[0037] As adhesives used for laminating adhesion of the porous fiber film which consists of porous resin film currently formed in the thermoplastics film in this invention, and fiber, vinyl acetate system adhesives, acrylic adhesives, polyester system adhesives, urethane system adhesives, epoxy system adhesives, EVA system adhesives, ionizing-radiation hardening mold adhesives, etc. can use what is used from the former.
[0038] The urethane prepolymer system adhesives of a non-solvent system and ionizing-radiation hardening mold adhesives are desirable also from the point which does not use a solvent in it. the urethane prepolymer of the 1 liquid moisture hardening mold obtained as non-solvent mold polyurethane REPORIMA system adhesives by the reaction of polyol components, such as polyether polyol which has a hydroxyl group in both ends, and polyester polyol, and an isocyanate component -- or it is not limited especially although the adhesives of the 2 liquid hardening mold divided into the polyol component and the isocyanate component are mentioned. As an isocyanate component, hexamethylene di-isocyanate (HMDI), 2, a 4-diisocyanate-1-methylcyclohexane, 2, a 6-diisocyanate-1-methylcyclohexane, A diisocyanate cyclobutane, tetramethylene di-isocyanate, O-, m- and p-xylylene diisocyanate (XDI), dicyclohexylmethane diisocyanate, Dimethyl dicyclohexylmethane diisocyanate, hexahydro meta-xylidene di-isocyanate (HXDI), And a resin group or cycloaliphatic diisocyanate, such as lysine diisocyanate alkyl ester (as for the alkyl part of this alkyl ester, it is desirable to have 1-6 carbon atoms) : Toluylene -2, 4-diisocyanate (TD1),

Toluylene -2, 6-diisocyanate, diphenylmethane -4, 4'-diisocyanate (MDI), 3-methyl diphenylmethane -4, 4'-diisocyanate, m-, and p-phenylene diisocyanate, The chloro phenylene -2, 4-diisocyanate, naphthalene 1, 5-diisocyanate, Diphenyl -4, '-diisocyanate, 3, 3'-dimethyl diphenyl -4, 4'-diisocyanate, Aromatic-series diisocyanate, such as 1, 3, 5-triisopropyl benzene -2, 4-diisocyanate, and diphenyl ether diisocyanate: Such mixture is used for a list. Moreover, the electron ray hardening resin used for said porous resin film as ionizing-radiation hardening mold adhesives or ultraviolet-rays hardening resin can be used.

[0039] Which approaches, such as the roll coating method, the blade coating approach, the reverse-roll-coating approach, the gravure coating approach, the knife coating approach, the spray coating approach, the offset gravure coating approach, the kiss coating approach, and the bar coating approach, are sufficient as the method of application of adhesives, and it is not limited especially. as the field which applies adhesives -- the porous resin film and the porous fiber film -- it is more desirable to carry out coating to the porous fiber film, in order not to blockade opening of the porous resin film, although you may apply to whichever. When applying adhesives to the porous fiber film, and viscosity is not much high, it is desirable to lower viscosity because fiber heats a roll since poor dedropping coating occurs, and to carry out coating by 5000cps or less. Furthermore, it is desirable to carry out coating among 300-3000cps preferably. Opening is blockaded after the porous resin film and lamination as viscosity is 300cps or less, ink permeability may be checked, and fiber omission of a porous fiber layer become it easy to take place to be 5000cps or more.

[0040] When a moisture hardening mold urethane prepolymer is used, it is desirable to perform an about [a 2-4 day room] cure in order to promote a reaction for the stencil paper for sensible-heat mimeograph printing rolled in the shape of a roll. It is 50 degrees C or less preferably as temperature of a cure, and is 40 degrees C or less still more preferably. Above 50 degrees C, contraction of a thermoplastics film occurs and the problem of curl arises.

[0041] Like the time of said porous resin film formation, in the case of ionizing-radiation hardenability adhesives, an electron ray or ultraviolet rays is irradiated, and it stiffens them.

[0042] The coverage after desiccation of the adhesives in this invention is 0.10g/m2 - 1.00 g/m2 preferably that what is necessary is just within the limits of 0.05 g/m2 - 1.50 g/m2. If the coverage after desiccation is less than two 0.05 g/m, an adhesive property will fall, and ink permeability inhibition occurs that it is 1.50 g/m2 excess.

[0043] Moreover, an antistatic agent etc. can also be added if needed in adhesives. As an antistatic agent, a cation system, an anion system, the Nonion system, both sexes, carbon, an electrical conducting material, etc. are mentioned.

[0044] As for the stencil paper for sensible-heat mimeograph printing of this invention, it is desirable to prepare the thin layer which consists of silicone oil, silicone system resin, fluororesin, a surfactant, an antistatic agent, a heat-resistant agent, an antioxidant, an organic particle, an inorganic particle, a pigment, a distributed assistant, antiseptics, a defoaming agent, etc. in order to prevent the welding at the time of punching on one side which should contact the thermal head of a film. 0.005-0.4 micrometers of thickness of the thin layer of this welding prevention are 0.01-0.4 micrometers more preferably.

[0045]

[Example] Hereafter, although an example explains this invention, this invention is not limited to these.

[0046] (Example 1) Using NI shaft extension polyester film with a thickness of 2.0 micrometers as a thermoplastics film, coating of the W/O emulsion coating liquid for porous resin film formation which consists of the following formulas was carried out so that desiccation coating weight might become 7.0 g/m2 by the die coat method, the electron ray of 5Mrad was irradiated, after hardening an oil reservoir component, the aqueous phase was dried at 60 degrees C, and the porous resin film was prepared.

(W/O emulsion coating liquid for porous resin film formation)

Electron ray hardening resin 20 weight sections (the product made from Arakawa Chemical industry, trade name beam set AQ-7)

Emulsifier The 0.05 weight sections (Product [made from daylight chemical], and trade name NIKKOL SO15U)

Emulsifier The 0.05 weight sections (the product made from Shin-etsu Chemistry, trade name KF6012)

Emulsifier The 0.1 weight sections (the product made from Johnson Polymer, trade name JON krill 711)

Hydroxyethyl cellulose 1% water solution While the hydroxyethyl cellulose 1% water solution was dropped adding and stirring an emulsifier to 20 weight sections electron ray hardening resin, in addition, it stirred for 60 minutes, and the W/O emulsion coating liquid for porous resin film formation was obtained.

[0047] Subsequently, it applied so that the coating weight after drying silicone oil (SF8422 by Shin-Etsu Chemical Co., Ltd.) might serve as 0.05 g/m2 as a stick prevention layer, and the stencil paper for sensible-heat mimeograph printing of this invention was obtained. An evaluation result is shown in Table 1.

[0048] (Example 2) Using NI shaft extension polyester film with a thickness of 2.0 micrometers as a thermoplastics film, coating of the W/O emulsion coating liquid for porous resin film formation which consists of the following

formulas was carried out so that desiccation coating weight might become 6.0 g/m2 by the die coat method, the electron ray of 5Mrad was irradiated, after hardening an oil reservoir component, the aqueous phase was dried at 60 degrees C, and the porous resin film was prepared.
(W/O emulsion coating liquid for porous resin film formation)
Electron ray hardening resin 20 weight sections (the product made from Arakawa Chemical industry, trade name beam set AQ-7)
Emulsifier The 0.1 weight sections (Product [made from daylight chemical], and trade name NIKKOL SO15U)
Emulsifier The 0.1 weight sections (the product made from Shin-etsu Chemistry, trade name KF6012)
Emulsifier The 0.2 weight sections (the product made from Johnson Polymer, trade name JON krill 711)
Hydroxyethyl cellulose 1% water solution While the hydroxyethyl cellulose 1% water solution was dropped adding and stirring an emulsifier to 25 weight sections electron ray hardening resin, in addition, it stirred for 60 minutes, and the W/O emulsion coating liquid for porous resin film formation was obtained.
[0049] Subsequently, it applied so that the coating weight after drying silicone oil (SF8422 by Shin-Etsu Chemical Co., Ltd.) might serve as 0.05 g/m2 as a stick prevention layer, and the stencil paper for sensible-heat mimeograph printing of this invention was obtained. An evaluation result is shown in Table 1.
[0050] (Example 3) Using NI shaft extension polyester film with a thickness of 2.0 micrometers as a thermoplastics film, coating of the W/O emulsion coating liquid for porous resin film formation which consists of the following formulas was carried out so that desiccation coating weight might become 1.5 g/m2 by the die coat method, the electron ray of 5Mrad was irradiated, after hardening an oil reservoir component, the aqueous phase was dried at 60 degrees C, and the porous resin film was prepared.
(W/O emulsion coating liquid for porous resin film formation)
Electron ray hardening resin 20 weight sections (the product made from Arakawa Chemical industry, trade name beam set AQ-7)
Emulsifier The 0.1 weight sections (Product [made from daylight chemical], and trade name NIKKOL SO15U)
Emulsifier The 0.1 weight sections (the product made from Shin-etsu Chemistry, trade name KF6012)
Emulsifier The 0.2 weight sections (the product made from Johnson Polymer, trade name JON krill 711)
Hydroxyethyl cellulose 1% water solution While the hydroxyethyl cellulose 1% water solution was dropped adding and stirring an emulsifier to 25 weight sections electron ray hardening resin, in addition, it stirred for 60 minutes, and the W/O emulsion coating liquid for porous resin film formation was obtained.
[0051] Subsequently, using the short network paper machine, paper making was carried out and the porous fiber film was obtained so that the basis weight of the binder PET fiber 50 weight section with a fineness of 1.1 deniers and the PET fiber 50 weight section with a fineness of 0.4 deniers might serve as 10.0 g/m2. Then, it applied to the porous fiber film created previously after ****, and laminated with the porous resin film surface created previously, and the electron ray of 5Mrad was irradiated so that coating weight might serve as 0.3 g/m2 using the roll coater which heated ionizing-radiation hardenability adhesives (beam set 502 by the Arakawa chemistry company H) at 60 degrees C. Furthermore, it applied so that the coating weight after drying silicone oil (SF8422 by Shin-Etsu Chemical Co., Ltd.) to the adhesion side of a thermoplastics film and the field of the opposite side might serve as 0.05 g/m2, and the stencil paper for sensible-heat mimeograph printing of this invention was obtained. An evaluation result is shown in Table 1.
[0052] (example 4) use NI shaft extension polyester film with a thickness of 2.0 micrometers as a thermoplastics film, coating of the W/O emulsion coating liquid for porous resin film formation which consist of the following formulas be carried out so that desiccation coating weight might become 1.2 g/m2 by the wire bar method, ultraviolet rays be irradiated for 20 seconds from a height of 10 cm, after harden an oil reservoir component, an aqueous phase be dried at 60 degrees C, and a porous resin film be prepared from the Ultraviolet curing unit (unit output 80 W/cm).
(W/O emulsion coating liquid for porous resin film formation)
Electron ray hardening resin 20 weight sections (the product made from Arakawa Chemical industry, trade name beam set AQ-11)
Polymerization initiator (IRGACURE 184) The 0.10 weight sections Emulsifier The 0.05 weight sections (Product [made from daylight chemical], and trade name NIKKOL SO15U)
Emulsifier The 0.05 weight sections (the product made from Shin-etsu Chemistry, trade name KF6012)
Emulsifier The 0.1 weight sections (the product made from Johnson Polymer, trade name JON krill 711)
Hydroxyethyl cellulose 1% water solution While the hydroxyethyl cellulose 1% water solution was dropped adding and stirring an emulsifier to 20 weight sections electron ray hardening resin, in addition, it stirred for 60 minutes, and the W/O emulsion coating liquid for porous resin film formation was obtained.
[0053] With subsequently, the combination paper machine which consists of a cylinder mould (the 1st paper formation) and a short network (the 2nd paper formation) So that the basis weight of the binder PET fiber 50 weight

section with a fineness of 1.1 deniers and the PET fiber 50 weight section with a fineness of 0.4 deniers may serve as 5.0 g/m2 as the 1st paper (porous fiber film) The **** doubling laminating sheet was obtained so that the basis weight of the Manila hemp fiber as the 2nd paper (porous fiber film reinforcement layer) might serve as 10.0 g/m2. Next, using the roll coater which exfoliated and warmed the 1st paper and 2nd paper of this laminating sheet at 100 degrees C at the stripped plane of the 1st paper (porous fiber film) which exfoliated, 1 liquid type urethane application (Takenate A260 by Takeda Chemical Industries, Ltd.) was applied after **** so that coverage might serve as 0.2 g/m2, and it laminated with the porous resin film surface produced previously. The viscosity of the adhesives at the time of spreading was about 1000cps. Subsequently, it rolled round, after applying so that the coating weight after drying silicone oil (SF8422 by Shin-Etsu Chemical Co., Ltd.) to the adhesion side of a thermoplastics film and the field of the opposite side may be set to 0.05g/m2, and the cure was performed for two days at 40 degrees C, and the stencil paper for sensible-heat mimeograph printing of this invention was obtained. An evaluation result is shown in Table 1.

[0054] (Example 1 of a comparison) Using NI shaft extension polyester film with a thickness of 2.0 micrometers as a thermoplastics film, coating of the W/O emulsion coating liquid for porous resin film formation which consists of the following formulas was carried out so that desiccation coating weight might become 7.0 g/m2 by the die coat method, and it dried at 50 degrees C, and the porous resin film was prepared.

(W/O emulsion coating liquid for porous resin film formation)

Polyvinyl butyral (the Sekisui Chemical Co., Ltd. make, BHS) The 2.0 weight sections Ethyl acetate The 18.6 weight sections Sorbitan monooleate The 0.15 weight sections (the Toho Chemical Co., Ltd. make, Sol Bon S80) Hydroxyethyl cellulose 1% water solution While the hydroxyethyl cellulose 1% water solution was dropped adding and stirring an emulsifier in the ethyl-acetate solution of 10 weight sections polyvinyl butyral, in addition, it stirred for 60 minutes and the W/O emulsion coating liquid for porous resin film formation was obtained.

[0055] Subsequently, it applied so that the coating weight after drying silicone oil (SF8422 by Shin-Etsu Chemical Co., Ltd.) might serve as 0.05 g/m2 as a stick prevention layer, and the stencil paper for sensible-heat mimeograph printing of this invention was obtained. An evaluation result is shown in Table 1.

[0056] (Example 2 of a comparison) The stencil paper for sensible-heat mimeograph printing was obtained like the example 3 except having set the basis weight of the porous fiber film to 16g/m2. A result is shown in Table 1.

[0057]

[Table 1]

	画像性		裏移り	印刷立上り（枚）	排版インキ量（g/Ｂ４・1版）	搬送性	
	初期	50℃強制保存				初期	50℃強制保存
実施例1	○	○	○	○	2．7	△	△
実施例2	○	○	○	○	2．8	△	△
実施例3	○	○	○	○	4．1	○	○
実施例4	○	○	○	○	3．3	○	○
比較例1	○	△	○	○	3．0	△	×
比較例2	×	×	○	×	5．5	○	○

[0058] (Measuring method of a property) The produced stencil paper was supplied to Ricoh Make "PURIPOTO JP 1300" (thermal head resolution 300dpi), and the thermal head type platemaking method performed platemaking and printing using the manuscript which has the alphabetic character of six point of 50mmx50mm black poor ****. In addition, the trial was carried out in the ordinary temperature environment. Moreover, it examined also about what saved compulsorily the stencil paper for sensible-heat mimeograph printing for one week at 50 degrees C about image nature and conveyance nature as evaluation of aging.

(1) 100-sheet printing was performed by the standard print speed for image nature, and the thing of the level which can use practically somehow that in which O and a white omission are conspicuous in what does not have a white omission in the black poor section by visual judgment in the printed matter of the 100th sheet with middle extent of x, and O and x was evaluated as **.

(2) The thing of the level which can use somehow the thing of back ****** of level which cannot bear at O and double-sided printing what does not have back ****** by visual judgment in a set-off about the 95-99th sheet of the

printed matter of the set-off above on real use with x and its middle extent was evaluated as **.
(3) It printed by the standard print speed for a printing standup, and evaluated by making into x that from which the image was obtained by printing after the after [** and version attachment] 2nd sheet in that from which the image was obtained by printing of the 1st sheet after O and version attachment in that by which the image was obtained from version attachment.
(4) The ** version was performed after the printing test termination of the amount above of ** version ink (1), and (2), the coating weight of the ink adhering to a version was calculated according to the weight difference with the stencil paper for sensible-heat mimeograph printing before test initiation, and the coating weight of the ink by which the ** version is carried out to B4 and per edition was measured as an amount of ** version ink (g/B4, the 1st edition).
(5) ** and the thing which could not convey at all but had the need from platemaking to a drum that wear and hand control performs even all versions were evaluated [what has been conveyed satisfactory at all at conveyance nature Ricoh Co., Ltd. make "PURIPOTO JP 1300"] for the thing to O and a drum by which it wears and Siwa goes into the back end section at the time of a version as x.
[0059]
[Effect of the Invention] As mentioned above, [whether according to this invention, an organic solvent is used at all by ink permeability being uniform, excelling in solid ******, and there being no set-off so that clearly from a detail and concrete explanation and] Or the environment-friendly stencil paper for sensible-heat mimeograph printing which lessened the amount of the organic solvent used is offered. Moreover, by preparing the porous resin film in one side of a thermoplastics film, and proposing the stencil paper for sensible-heat mimeograph printing which carried out the laminating of the porous fiber layer to the front face further The extremely excellent effectiveness that the environment-friendly stencil paper for sensible-heat mimeograph printing which ink permeability was uniform, it excelled in solid ******, and there was no set-off, and conveyance nature was excellent in and lessened the amount of the organic solvent used, not using an organic solvent with little aging at all is offered is done so.

[Translation done.]